

# **Installation Procedures for the DII Volume Manager Segment (for SPARCstorage Arrays) Version 3.0.0.5/2.3**

## **1.0 Volume Manager Segment Description**

The Volume Manager segment automates the installation of the SUN Volume Manager version 2.3 software and the required Solaris patches, the initialization of the SPARCstorage Array disk drives, and the creation of the volumes.

During the initial installation of the Volume Manager segment the following four Volume Manager version 2.3 software packages are loaded. If there is insufficient disk space available in the /opt file system (this is linked to /h/COTS/UNIX/opt in DII) to load all four packages (40 MBytes required) the segment will not load "SUNWassa" which reduces the disk space requirements to 30 MBytes.

SUNWassa	Using the SPARCstorage Array 2.3 AnswerBook
SUNWvmman	SPARCstorage Volume Manager (manual pages)
SUNWvxva	SPARCstorage Volume Manager Visual Administrator
SUNWvxvm	SPARCstorage Volume Manager

In addition the following Solaris patch is loaded during the initial installation of the Volume Manager segment. This patch will not be removed if the Volume Manager segment is deinstalled:

103766-02	Jumbo Patch for SSA for Solaris 2.5.1
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During the installation of the Volume Manager segment the segment will identify all SPARCstorage arrays that are attached to the system. It will also determine the number of disk drives and the size of the disk drives in each of the SPARCstorage arrays. It will sort the SPARCstorage arrays such that the first SPARCstorage array that will be configured will be the one with the largest number of disk drives and the largest size of disk drives.

The Volume Manager segment is provided with a set of configurations that it will use to configure the SPARCstorage arrays(see section 4). The installer also has the option of manually configuring the SPARCstorage arrays via the segment or configuring them at a later time.

## **1.1 Segment Requirements**

A Solaris 2.5.1 system with the appropriate DII Kernel installed is

required. The Volume Manager segment will not install if at least one SPARCstorage array is not connected and recognized by the SUN platform. In addition the Volume Manager segment will abort the install if NIS+ is up. The /opt file system, which is a link to /h/COTS/UNIX/opt in DII, must have at least 30 Mbytes of disk space available. The software packages loaded by the Volume Manager segment are compress using the GNU gzip function, therefore the DII GNU Zip Compression Utility segment is required.

If the system on which the Volume Manager segment is being installed currently has Volume Manager software installed on it, the Volume Manager segment's PostInstall will kill all Volume Manager processes and remove all Volume Manager software before continuing with the installation of the Volume Manager segment. The installer should insure that all volumes are unmounted and halted before installing the Volume Manager segment.

## **2.0 Volume Manager Segment Installation Instructions**

The Volume Manager segment is loaded by using the Segment Installer. The installation occurs in three distinct phases:

- 1) The Volume Manager software packages and patch are loaded, the attached SPARCstorage arrays are identified, and the appropriate configuration files are built.
- 2) All disk drives on the SPARCstorage Arrays are initialized.
- 3) The volumes and file systems are created on the SPARCstorage Arrays.

## **2.1 Volume Manager Software Installation and Configuration**

During the installation the following messages will be displayed to the installer. If you are installing this segment on a system that currently has the Volume Manager software installed on it you will be notified that the Volume Manager packages are being removed.

Installing Volume Manager packages.

2.1.1 Select OK with the mouse to continue installation.

The following will not appear if patch 103766-02 is currently installed.

Installing Volume Manager patch 103766-02

2.1.2 Select OK with the mouse to continue installation.

The following Array controllers have been detected with the number of drives in parenthesis: c2 (30), c5 (30)

2.1.3 Insure that all the SPARCstorage arrays and disk drives have been detected. Select OK with the mouse to continue.

If all drives are not detected abort the installation and correct the problem. Do you want to continue?

2.1.4 Select Yes with the mouse to continue the installation.

The following SPARCstorage Arrays will be configured in the order:

C1, c2

You have three Configuration options:

- 1) Use configurations provided with segment
- 2) Configure the arrays manually
- 3) Configure at a later time.

2.1.5 Select OK with the mouse to continue.

Do you want to use the Volume Configurations provided with this segment?

2.1.6 It is highly recommended that the installer use the Volume Configurations provided with the segment. Otherwise the installer should have extensive expertise with building volumes. Select Yes or No with the mouse to continue.

Do you want to recover previously configured SPARCstorage Arrays?

2.1.7 If the SPARCstorage Arrays that are connected to the system were previously configured and you want to recover the data select Yes and go to section 3. Otherwise select No to continue with the installation.

Do you want to initialize the SPARCstorage Array disk drives?

2.1.8 Unless you want to initialize and configure the SPARCstorage Arrays manually you should select Yes. The following information messages will be output if you select Yes.

For Volume Manager Installation Options specify:

2 Custom Installation

For I options for controller specify:

2 Install all disks as new disks.

## 2.2 SPARCstorage Array Initialization

During the initialization process an xterm will be displayed in which the information and questions shown below will be displayed

NOTE: All non-array drives have been added to the disks.exclude file which prevents the Volume Manager from attempting to initialize non-array drives, destroying the data on them.

This function will initialize all SPARCstorage array disk drives as new drives. If the SPARCstorage arrays were previously configured, you will loose what was on them!

Do you wish to continue?(y/n)[y]:

2.2.1 Enter [y] and press <Return>.

Select Custom Installation when prompted

Initialize all SPARCstorage drives as new drives

If the SPARCstorage array disk drives were previously configured and have not been formatted you will see warning messages similar to the following during the initialization process:

vxvm:vxconfigd: WARNING: Disk c3t2d1s2 names group rootdg, but group ID differs

You should ignore these messages, they will not impact the initialization process

Hit <Return> when ready to continue:

2.2.2 Press <Return> to continue.

Generating list of attached controllers . . . .

Volume Manager Installation  
Menu: VolumeManager/Install

The Volume Manager names disks on your system using the controller and disk number of the disk, substituting them into the following pattern:

c<controller>t<disk>d<disk>

Some examples would be:

c0t0d0 - first controller, first target, first disk  
c1t0d0 - second controller, first target, first disk  
c1t1d0 - second controller, second target, first disk

The Volume Manager has detected the following controllers on your system:

c0: io-unit@f,e0200000/sbi@0,0/dma@0,81000/esp@0,80000  
c1: io-unit@f,e2200000/sbi@0,0/QLGC,isp@1,10000  
c2: io-unit@f,e0200000/sbi@0,0/SUNW,soc@2,0/SUNW,pln@a0000000,00722e39  
c3: io-unit@f,e0200000/sbi@0,0/SUNW,soc@3,0/SUNW,pln@a0000000,0072208e

Hit **<Return>** to continue.

2.2.3            Press **<Return>** to continue.

Volume Manager Installation  
Menu: VolumeManager/Install

You will now be asked if you wish to use Quick Installation or Custom Installation. Custom Installation allows you to select how the Volume Manager will handle the installation of each disk attached to your system.

Quick Installation examines each disk attached to your system and attempts to create volumes to cover all disk partitions that might be used for file systems or for other similar purposes.

If you do not wish to use some disks with the Volume Manager, or if you wish to reinitialize some disks, use the Custom Installation option. Otherwise, we suggest that you use the Quick Installation option.

Hit **<Return>** to continue.

2.2.4 Press **<Return>** to continue.

Volume Manager Installation Options  
Menu: VolumeManager/Install

- 1 Quick Installation
- 2 Custom Installation
- ? Display help about menu
- ?? Display help about the menuing system
- q Exit from menus

Select an operation to perform: 2

Volume Manager Custom Installation  
Menu: VolumeManager/Install/Custom

The c0t3d0 disk is your Boot Disk. This disk has been excluded by the /etc/vx/disks.exclude file.

Hit **<Return>** to continue.

2.2.5 Select **2**, Custom Installation, and press **<Return>**.

Volume Manager Custom Installation  
Menu: VolumeManager/Install/Custom/c0  
Generating list of attached disks on c0....

<excluding c0t0d0>

<excluding c0t1d0>

<excluding c0t2d0>

<excluding c0t3d0>

No disks were found attached to controller c0 !

Hit **<Return>** to continue.

2.2.6 Press **<Return>** to continue.

**NOTE: This screen will only appear if the CDROM is on controller c1.**

Volume Manager Custom Installation  
Menu: VolumeManager/Install/Custom/c1  
Generating list of attached disks on c1....

<excluding c1t6d0>

No disks were found attached to controller c1 !

Hit **<Return>** to continue.

2.2.7 Press **<Return>** to continue.

Volume Manager Custom Installation  
Menu: VolumeManager/Install/Custom/c2  
Generating list of attached disks on c2....

The Volume Manager has detected the following disks on controller c2:

c2t0d0 c2t0d1 c2t0d2 c2t0d3 c2t0d4 c2t1d0 c2t1d1 c2t1d2 c2t1d3 c2t1d4  
c2t2d0 c2t2d1 c2t2d2 c2t2d3 c2t2d4 c2t3d0 c2t3d1 c2t3d2 c2t3d3 c2t3d4  
c2t4d0 c2t4d1 c2t4d2 c2t4d3 c2t4d4 c2t5d0 c2t5d1 c2t5d2 c2t5d3 c2t5d4

Hit **<Return>** to continue.



2.2.8 Press **<Return>** to continue.

Installation options for controller c2

Menu: VolumeManager/Install/Custom/c2

- 1 Install all disks as pre-existing disks. (encapsulate)
- 2 Install all disks as new disks. (discards data on disks!)
- 3 Install one disk at a time.
- 4 Leave these disks alone.
  
- ? Display help about menu
- ?? Display help about the menuing system
- q Exit from menus

Select an operation to perform:

2.2.9 Select **2**, install all disks as new disks, and press **<Return>**.

Volume Manager Custom Installation

Menu: VolumeManager/Install/Custom/c2/Init

Use default disk names for these disks? [y,n,q,?] (default: y)

2.2.10 Press **<Return>** to continue.

The c2t0d0 disk will be given disk name disk01

The c2t0d1 disk will be given disk name disk02

The c2t0d2 disk will be given disk name disk03

The c2t0d3 disk will be given disk name disk04

The c2t0d4 disk will be given disk name disk05

.  
.  
.

The c2t5d1 disk will be given disk name disk27

The c2t5d2 disk will be given disk name disk28

The c2t5d3 disk will be given disk name disk29

The c2t5d4 disk will be given disk name disk30

Hit **<Return>** to continue.

2.2.11 Press **<Return>** to continue.

2.2.12 Steps 9 through 12 will be repeated for each  
SPARCstorage Array attached to the system.

Volume Manager Custom Installation  
Menu: VolumeManager/Install/Custom

The following is a summary of your choices.

c2t0d0 New Disk  
c2t0d1 New Disk  
c2t0d2 New Disk  
c2t0d3 New Disk  
c2t0d4 New Disk  
c2t1d0 New Disk  
c2t1d1 New Disk  
c2t1d2 New Disk  
c2t1d3 New Disk  
c2t1d4 New Disk

.  
.

c3t4d3 New Disk  
c3t4d4 New Disk  
c3t5d0 New Disk  
c3t5d1 New Disk

--More--(94%)

2.2.13 Press the **Space bar** to continue.

.  
.  
.  
c3t5d2 New Disk  
c3t5d3 New Disk  
c3t5d4 New Disk

Is this correct [y,n,q,?] (default: y)

2.2.14 Press **<Return>** to continue.

Volume Manager is now reconfiguring (partition phase)...

Volume Manager: Partitioning c2t0d0 as a new disk.

Volume Manager: Partitioning c2t0d1 as a new disk.

Volume Manager: Partitioning c2t0d2 as a new disk.

Volume Manager: Partitioning c2t0d3 as a new disk.

Volume Manager: Partitioning c2t0d4 as a new disk.

.  
. .  
.

Volume Manager: Partitioning c3t5d0 as a new disk.

Volume Manager: Partitioning c3t5d1 as a new disk.

Volume Manager: Partitioning c3t5d2 as a new disk.

Volume Manager: Partitioning c3t5d3 as a new disk.

Volume Manager: Partitioning c3t5d4 as a new disk.

The Volume Manager is now reconfiguring (initialization phase)...

**NOTE: If the SPARCstorage array drives were previously configured you will see warning similar to the following. These warning do not impact the initialization process!**

vxvm:vxconfigd: WARNING: Disk c3t4d2s2 names group rootdg, but group ID differs

vxvm:vxconfigd: WARNING: Disk c3t4d3s2 names group rootdg, but group ID differs

vxvm:vxconfigd: WARNING: Disk c3t4d4s2 names group rootdg, but group ID differs

The Volume Daemon has been enabled for transactions.

Volume Manager: Adding disk02 (c2t0d1) as a new disk.

Volume Manager: Adding disk03 (c2t0d2) as a new disk.

Volume Manager: Adding disk04 (c2t0d3) as a new disk.

Volume Manager: Adding disk05 (c2t0d4) as a new disk.

Volume Manager: Adding disk06 (c2t1d0) as a new disk.

.  
.  
.

Volume Manager: Adding disk46 (c3t3d0) as a new disk.

Volume Manager: Adding disk47 (c3t3d1) as a new disk.

Volume Manager: Adding disk48 (c3t3d2) as a new disk.

Volume Manager: Adding disk49 (c3t3d3) as a new disk.

.  
.  
.

Volume Manager: Adding disk60 (c3t5d5) as a new disk

The initialization of the SPARCstorage drives has been completed

To create the volumes double click on the (VOLUMES) icon.

Press <**Return**> when ready:

2.2.15      Press <**Return**> to exit initialization process.

## 2.3 Volume Creation Instructions

After the disk initialization process is complete the following question will be asked.

Do you want to execute the volume creation script?

2.3.1 If you elected to use the the configurations provided with the segment or manually configured the SPARCstorage arrays, via the segment, a configuration script has been built that will configure all SPARCstorage arrays that were attached to the system. Unless you want to create the volumes manually select Yes to continue.

Beginning to create Volumes specified, the log file for this process is located in /h/COTS/Volume\_Manager/data and is called volmanager\_log

You may bring up the "Volume Manager GUI" by selecting the "VOL GUI" icon. This will show you the Volumes as they are being built.

2.3.2 As part of the volume creation process the Volume Manager Visual Administrator will be launched. The installer should select the "rootdg" if they wish to monitor the status of the volume creation.

Building volumes on array c2 with mirror on c3

.  
.  
.

2.3.3 No action is required, the "Building volumes . . ." line will appear for each set of arrays that are configured. There is a five minute delay between each "Building volumes . . ." message. This allows all the volumes to be defined on a SPARCstorage array before the next SPARCstorage array is configured.

The Volume Creation Process is Complete.

Hit <Return> when ready: .

2.3.4 Press <Return> to close the window.

## 2.4 Volume Manager Installation Complete

The following messages will appear if the firmware on the SPARCstorage array controllers was upgraded.

The SPARCstorage arrays firmware was upgraded, shutdown the system.

Before rebooting, you must Cycle power on the SPARCstorage Array<s> for this change to take effect.

2.4.1 Click on OK with the mouse to complete the segment installation.

2.4.2 Exit the Segment Installer when it reappears. If the messages shown above were displayed shut down the system and power cycle the SPARCstorage arrays as directed.

### 3.0 SPARCstorage Array Recovery Instructions

If you answered yes at step 2.1.7 it is assumed that the SPARCstorage Arrays that are connected to the system were previously configured and you want to recover the data on them. The following output will be displayed during the recovery:

This procedure is to recover previously configured SPARCstorage Arrays

If you do not wish to recover the SPARCstorage Arrays use vxinstall.

Do you wish to continue?(y/n)[n]:

3.1 Type **y** and press **<Return>** to continue.

Performing steps outlined in SPARCstorage Array User's Guide  
to recover the Volume Manager Configuration on previously configured  
SPARCstorage Arrays (Page E-38)

Removing: /etc/vx/reconfig.d/state.d/install-db file

Executing: vxiod set 10

Executing: vxconfigd -m disable

Executing: vxdctl init

Executing: vxdctl enable

Updating the /etc/vfstab file to reflect original Volume Configuration

Updating /etc/system file to reflect original Volume Configuration

The Volume Manager Configuration that existed before this segment  
was installed has been restored. Reboot the system to continue.

Hit **<Return>** when ready:



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Installation Procedures  
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#### 4.0 SPARCstorage Array Configurations

Tables 1 through 4 identify how the first SPARCstorage array will be configured on a system. If there are several SPARCstorage arrays attached to a system the first will be the one with the largest number of disk drives and then the largest sized disk drives. Each additional SPARCstorage array will be configured as shown in table 5 with the mount points being incremented accordingly. The following guidelines are used in defining these tables:

1. The first volume on the first SPARCstorage array is mount as /home20, with each subsequent volume being mounted as /home21, /home22, /home23 and so forth. Mount points /home1 through /home19 are reserved for non-SPARCstorage array disk drives.
2. If two SPARCstorage arrays have the same number and size of disk drives one SPARCstorage array will be used to mirror the other. In this case the last volume will lose a drive for providing one drive on each SPARCstorage array for hot-relocation

**Table 1.**

<b>SPARCstorage Array with 30 Disk Drives (1.05 or 2.1 GB)</b>	
Number of Drives	Mount Point
6	/home20
6	/home21
6	/home22
6	/home23
3	/home24
3	/home25
If this SPARCstorage Array is mirrored a drive will be removed from the /home25 volume for use as a hot-relocation drive.	

**Table 2.**

<b>SPARCstorage Array with 18 Disk Drives (1.05 or 2.1 GB)</b>	
Number of Drives	Mount Point
6	/home20
6	/home21
3	/home22
3	/home23
If this SPARCstorage Array is mirrored a drive will be removed from the /home23 volume for use as a hot-relocation drive.	

**Table 3**

<b>SPARCstorage Array with 16 Disk Drives (1.05 or 2.1 GB)</b>	
Number of Drives	Mount Point
6	/home20
6	/home21
3	/home22
3	/home23
If this SPARCstorage Array is mirrored a drive will be removed from the /home24 volume for use as a hot-relocation drive.	

**Table 4**

<b>SPARCstorage Array with 24 Disk Drives (1.05 or 2.1 GB)</b>	
Number of Drives	Mount Point
6	/home20
6	/home21
6	/home22
3	/home23
3	/home24
If this SPARCstorage Array is mirrored a drive will be removed from the /home24 volume for use as a hot-relocation drive.	

**Table 5**

<b>Additional SPARCstorage Arrays</b> (Number of total disk drives specified in parenthesis)	
Number of Drives	Mount Point
6	/home(##)
6	/home(##)
6 (18)	/home(##)
6 (24)	/home(##)
6 (30)	/home(##)
If this SPARCstorage Array is mirrored a drive will be removed from the last volume for use as a hot-relocation drive.	
## The mount points are incremented to the next available /home.	

## 5.0 Deinstallation Instructions

### 5.1 Pre-Deinstallation Procedures

Prior to deinstalling the Volume Manager segment the installer must unmount and stop any volumes which were configured. To do this execute the following:

5.1.1 Bring up the Volume Manager Visual Administration GUI by typing the following:

```
/opt/SUNWvxxv/bin/vxva [Return]
```

5.1.2 Display the root disk group by clicking on the "rootdg" button.

5.1.3 Highlight all mounted volumes by clicking on each volume with the middle mouse button.

5.1.4 From the rootdg menu select "Basic-Ops" and then "File System Operations" and then "Unmount". This will unmount all mounted volumes. The mount point displayed under the volume (i.e. /home20) will disappear.

5.1.5 To stop all volumes select "Advanced-Ops" from the rootdg menu, then select "Volume", then "Stop Volumes", and the "Stop All". The shading of the plexes in each volume should change when the volumes are stopped.

5.1.6 If you have configured disks in other disk groups you should perform the above procedures for those disk groups also.

### 5.2 Deinstallation Process Description

During the deinstallation of the segment all Volume Manager processes will be kill and then the four or three Volume Manager packages that were installed will be removed.